MATERIAL SAFETY DATA SHEET

FOR COATINGS, RESINS, AND RELATED MATERIALS

Date of Preparation- 04/24/88 Page 1

Manufacturer: GEMINI LACQUERS, INC.
Address : 101 S.W. 22ND STREET
El Reno, OK 73036

Telephone#: (405) 262-5710 Night: (405) 262-5710
Emergency#: (405) 262-5710 Night: (405) 262-5710

SECTION I PRODUCT IDENTIFICATION

Manufacturer's Code Identification: S10,252
Product Class: LACQUER
Trade Name: ENGLISH OAK WIPING STAIN

HMIS Information: Health- Flammability-
Reactivity- Personal Protective Equipment-
HAZARD INDEX: 4= Severe 3= Serious 2= Moderate 1= Slight 0= Least

SECTION II HAZARDOUS INGREDIENTS

----- INGREDIENT ----- MATERIAL DESCRIPTION	CAS#	ACGIH TLV(TWA) PPM	OSHA PEL PPM	LEL / VAPOR PRESSURE & OTHER LIMITS
02 NAPHTHA LACQUER DILU/LIGHT ALIPHATIC NAPHTHA	64742-89-8	200.00/NOT EST	1.0	80
03 AROMATIC 100 SOLVENT/LIGHT AROMATIC NAPHTHA	64742-95-6	50.00/NOT EST	.9	10
07 ISOBUTYL ACETATE	110-19-0	150.00/150.00	1.3	1%
08 BUTYL CELLOSOLVE 2-BUTOXYETHANOL	111-76-2	25.00/NOT EST	1.1	
09 BUTYL CELLOSOLVE ACE BUTOXYETHANOL ACETATE	112-07-2	NOT EST/NOT EST	.1	
18 DI-OCTYL PHTHALATE	117-81-7	NOT EST/NOT EST	.1	
35 NITROCELLULOSE	9004-70-0	NOT EST/NOT EST		CARCINOGEN

%PB---
%CR---

SECTION III PHYSICAL DATA

BOILING RANGE	HIGH 600.0 DF LOW 211.0 DF
VAPOR PRESSURE	60.00 MMHG @68DF
VAPOR DENSITY	HEAVIER THAN AIR
EVAPORATION RATE	FASTER THAN BUTYL ACETATE
WEIGHT PER GALLON	7.1
% VOLATILE BY WEIGHT	96.11

****

This product contains pigments which may become a dust nuisance when removed by abrasive blasting, sanding, or grinding.

****

This product contains one or more reported carcinogens or suspected carcinogens which are noted NTP, IARC, or OSHA-Z in the other limits recommended column.

****

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flammability Classification CLASS IB DOT- FLAMMABLE LIQUID
Lowest Flashpoint TCC 021.0 DF Lower Explosion Level(LEL) 000.3

EXTINGUISHING MEDIA

Use CO2, DRY CHEMICAL, or ALCOHOL FOAM

A water stream can scatter flames. A spray of water may be used to cool fire-exposed containers.
Based on the presence of components (18) Fire fighters should use self-contained breathing apparatus with full facepiece.

****

SECTION V HEALTH HAZARD DATA

EFFECTS OF EXCESSIVE EXPOSURE
Reports have associated repeated and prolonged occupational excessive exposure to solvents with permanent brain and nervous system damage.
Based on the presence of components (18) ingestion of this material may produce a sensation of hotness with vomiting, diarrhea, and nausea as symptoms.
Based on the presence of components (08) Headaches, nausea, dizziness, and vomiting may occur from inhalation.
Based on the presence of components (08) ingestion of this product will cause irritation of the gastrointestinal tract and may cause effects resembling those from inhalation of vapor.
Ingestion may cause possible liver damage.
Ingestion may cause possible kidney damage.
Based on the presence of components (08) this product may cause nose and throat irritation.
Based on the presence of components (08,18) this product can be irritating to the eyes.
Based on the presence of components (18) this product may cause skin irritation.

SECTION VI REACTIVITY DATA

INCOMPATIBILITY (Materials to Avoid)
Based on the presence of components (08) this raw material is incompatible with strong oxidizing agents, strong mineral acids, alkali metals, and halogens.

STABILITY
This product is stable.

HAZARDOUS POLYMERIZATION
Will not occur.

HARZARDOUS DECOMPOSITION
Thermal decomposition in the presence of air may yield carbon monoxide and/or carbon dioxide.

INCOMPATIBILITY (Materials to Avoid)
Based on the presence of components (13) this product is incompatible with strong oxidizing agents: contact with these materials may cause fire or explosion.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Stay upwind and away from spill unless wearing appropriate protective equipment. Stop and/or contain discharge if it may be done safely. Keep all sources of ignition away. Ventilate area of spill. Use non-sparking tools for cleanup. Cover with inert material to reduce fumes. Keep out of drains, sewers, and waterways. Contact fire authorities. Notify local health and pollution control agencies. Call spill response teams if large spill.

WASTE DISPOSAL METHOD
Dispose of product in accordance with applicable local, county, State, and Federal regulations.
Based on the presence of components (08) do NOT flush to sewer, watershed, or waterway.

SECTION VIII SAFE HANDLING AND USE INFORMATION

PROTECTIVE GLOVES
Required for prolonged or repeated contact. Wear resistant gloves such as natural rubber, neoprene, buna N or nitrile. An apron should be worn to avoid skin contact.
RESPIRATORY PROTECTION
If exposure exceeds TLV, use a NIOSH-approved respirator to prevent excessive exposure.
VENTILATION
Use ventilation as required to control vapor concentrations. Avoid prolonged or repeated breathing of vapors. If exposure exceeds TLV, use a NIOSH-approved respirator to prevent excessive exposure.
HYGIENIC PRACTICES
Wash hands thoroughly before eating and using washroom.
Remove contaminated clothing immediately and do not wear it until it has been properly laundered.
PROTECTIVE EYEWEAR
Use safety eyewear with perforated sideshields.

Eyewash stations and safety showers should be readily available in use and handling areas.

Avoid contact with eyes. Wear goggles if there is a likelihood of contact with eyes.

SECTION IX SPECIAL PRECAUTIONS

HANDLING AND STORING PRECAUTIONS
Keep product containers cool, dry, and away from sources of ignition. Use and store this product with adequate ventilation. Do NOT smoke in storage areas.
Personnel should avoid inhalation of vapors. Personal contact with the product should be avoided. Should contact be made, remove saturated clothing and flush affected skin areas with water. Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this sheet must be observed.
*****
NOTICE - Reports have associated repeated and prolonged occupational excessive exposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

THE INFORMATION CONTAINED HEREIN IS INFORMATION RECEIVED FROM OUR RAW MATERIAL SUPPLIERS AND OTHER SOURCES AND IS BELIEVED TO BE RELIABLE. THIS DATA IS NOT TO BE TAKEN AS A WARRANTY OR REPRESENTATION FOR WHICH THE ABOVE MENTIONED MANUFACTURER ASSUMES LEGAL RESPONSIBILITY

MATERIAL SAFETY DATA SHEET FOR: 04114

THE GLIDDEN CO.
9930 "L" STREET
OMAHA NE 68127

PRODUCT: PINE OIL

ORDER NO: 139657
PROD NO : 321440

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

----------REVISION----------

02/87: ADDED SYNONYMS.

08/89: CHANGED HEADING AND CONTACT INFORMATION.

01/92: ADDED SYNONYM

---------- FOR ADDITIONAL INFORMATION ----------

CONTACT: MSDS COORDINATOR VW&R OMAHA
DURING BUSINESS HOURS, PACIFIC TIME (206)889-3400

01/07/94 04:55 PRODUCT: 321440 CUST NO: 180233 ORDER NO: 139657

---------- NOTICE ----------

** VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN. **

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&RS CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON , INFORMATION CONTAINED HEREIN. S INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT LATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER OCESS.

*** E N D O F M S D S ***

MATERIAL SAFETY DATA SHEET

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

COMPANY INFORMATION

H.B. Fuller Company
3530 Lexington Avenue N.
St. Paul, MN 55126-8076
Phone: 612-481-3300
Fax: 612-481-3309

MSDS INFORMATION

Preparation Date: 03/05/96
Supersedes: 12/30/94
Prepared By: Industrial Hygiene
Phone Number: 612-481-4842

Medical Emergency Phone Number: 1-800-228-5635 ext 018
Transport Emergency Phone Number (CHEMTREC): 1-800-424-9300

PRODUCT INFORMATION

Product Name/Number: SC-1935
Product Description (product use): Solvent based adhesive

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

This Material Safety Data Sheet is prepared to comply with the United States Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Workplace Hazardous Materials Information System (WHMIS). Unlisted ingredients are not 'hazardous' per the OSHA standard and/or are not found on the WHMIS ingredient disclosure list.

Chemical/CAS Number	Percent	OSHA PEL	ACGIH TLV
Methyl ethyl ketone (78-93-3)	5-10%	200 ppm	200 ppm
LD50: 2737 mg/kg (oral, rat) LC50: 47,000 mg/M3/4h (rat)			
Vapor pressure, in mm Hg @ 20 C: 78			
OSHA, ACGIH STEL: 300 ppm			
n-Hexane (110-54-3)	30-50%	50 ppm	50 ppm
other isomers		500 ppm	500 ppm
LD50: 28,710 mg/kg (oral, rat) LC50: 48,000 ppm/4h (rat)			
Vapor pressure, in mm Hg @ 20 C: 120			
OSHA, ACGIH STEL: 1000 ppm (for isomers)			
Toluene (108-88-3)	5-10%	100 ppm	50 ppm
LD50: 5000 mg/kg (oral, rat) LC50: 7524 ppm/4h (rat)			
Vapor pressure, in mm Hg @ 20 C: 24			
OSHA, ACGIH STEL: 150 ppm			
(Skin)			
Acetone (67-64-1)	10-30%	750 ppm	750 ppm
LD50: 5800 mg/kg (oral, rat) LC50: 100,200 mg/M3/4h (rat)			
Vapor pressure, in mm Hg @ 20 C: 180			
OSHA, ACGIH STEL: 1000 ppm			

See Section 16 for additional information.

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Flammable
Eye irritant
Contact will dry and defat the skin
Vapors harmful
Harmful if swallowed
May cause adverse reproductive effects, based on tests with laboratory animals.

POTENTIAL HEALTH EFFECTS

Eyes: Contact with the product or high vapor levels will cause irritation.

Skin: Liquid contact will dry and defat the skin. Prolonged or repeated contact may cause irritation and sensitization.

Inhalation: Overexposure to vapors in poorly ventilated areas will cause irritation of the nose, throat and respiratory tract and may cause dizziness, headaches, nausea or unconsciousness.

Ingestion: Harmful if swallowed.

Chronic: Long-term overexposure to solvents may cause liver and kidney damage.
n-Hexane has been demonstrated to cause peripheral nerve damage in overexposed workers. Symptoms include loss of feeling and weakness in the hands and feet and loss of manual dexterity.
Overexposure to toluene may cause female and male reproductive disorders, based on tests with laboratory animals. Current exposure guidelines are expected to protect from these effects.

REGULATED CARCINOGEN STATUS:

This product does not contain regulated levels of NTP, IARC, ACGIH or OSHA listed carcinogens.

Existing Health Conditions Affected by Exposure: No known effects on other illnesses.

SECTION 4: FIRST AID MEASURES

If in eye: Flush immediately with large amounts of water for at least 15 minutes. Call a physician.

If on skin: Wash affected area with soap and water. Launder contaminated clothing before reuse.

If vapors inhaled: Remove from exposure. Restore breathing if necessary. Keep warm and quiet. Call a physician.

If ingested: If person can swallow, give one glass of water or milk. Do not induce vomiting. Get immediate medical attention. Never give anything by mouth to an unconscious person.

SECTION 5: FIRE FIGHTING MEASURES

Flash Point/Method: Less than 0 degrees F TCC, Less than -18 degrees C

Upper Explosive Limit/Lower Explosive Limit: Not established

Autoignition Temperature: Not established

Appropriate Extinguishers: Use water spray, foam, dry chemical or carbon dioxide.

Special Fire Fighting Procedures: Persons exposed to products of combustion should wear self-contained breathing apparatus and full protective equipment.

Unusual Fire and Explosion Hazards: There is the possibility of pressure buildup in closed containers when heated. Water spray may be used to cool the containers.

Solvent vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from the material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

Hazardous Combustion Product: Incomplete combustion can yield low molecular weight hydrocarbons, carbon monoxide, hydrogen chloride, hydrogen chloride, phosgene

SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Remove all sources of ignition. Ventilate area. Avoid breathing vapors. Dike and contain spill with inert absorbent and transfer to container for disposal. Use non-sparking tools. Keep spill out of sewers.

SECTION 7: HANDLING AND STORAGE

HANDLING INFORMATION

Keep away from heat, sparks and flame
Avoid breathing vapors
Use only with adequate ventilation
Avoid contact with eyes, skin and clothing
Wash thoroughly after handling
Keep container closed
Emptied container retains vapor and product residue
Observe all labeled precautions until container is cleaned
DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER

STORAGE INFORMATION

Consult the Technical Data Sheet for specific storage instructions.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection: Wear safety glasses to reduce the potential for eye contact; chemical safety goggles are appropriate if splashing is likely. Have eye washes available where eye contact can occur.

Skin Protection: Prevent contact by using rubber gloves and appropriate protective clothing. Launder contaminated clothing before reuse.

Respiratory Protection: Use NIOSH approved supplied air respirator if conditions warrant.

Ventilation: Local exhaust ventilation preferred. Provide ventilation to control contaminant levels below airborne exposure limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Characteristic color
Odor:	Pungent Solvent
Odor Threshold:	Not established
Weight per Gallon:	6.8 lbs.
Specific Gravity:	0.81
% Solids by Weight:	19
pH:	Not applicable
Boiling Range:	Greater than 133 F (56 C)
Freezing/Melting Point:	Not applicable
Vapor Pressure:	Not established
Vapor Density:	Not established
Evaporation Rate:	Not established

Water/Oil Partition Coefficient: Not established

VOC:	442 g VOC/liter of material (VOC theoretically determined using EPA Publication 450/3-84-019)
VOC, less water:	611 g VOC/liter of material, less water and exempt solvents (VOC theoretically determined using EPA Publication 450/3-84-019.)

SECTION 10: STABILITY AND REACTIVITY DATA

Stability: Stable

Incompatibility: Not established

Hazardous Decomposition:
Hydrogen chloride

Hazardous Polymerization: Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

No data available

SECTION 12: ECOLOGICAL INFORMATION

No data available

SECTION 13: DISPOSAL CONSIDERATIONS

This product meets the definition of hazardous waste under the U.S. EPA Hazardous Waste Regulations 40 CFR 261. It is ignitable waste class D001. Disposal via incineration is recommended. Consult your state, local, or provincial authorities for more restrictive requirements.
This product contains methyl ethyl ketone. Leachate tests have not been performed.

SECTION 14: TRANSPORTATION INFORMATION

UNITED STATES DEPARTMENT OF TRANSPORTATION (DOT)

DOT Proper Shipping Name:	Adhesives
DOT Hazard Class/I.D. Code:	3, UN1133
DOT Label:	FLAMMABLE LIQUID
DOT Packaging Group:	II

It is our opinion that the information provided here may be used to transport this product in compliance with Canadian Transportation of Dangerous Goods.

SECTION 15: REGULATORY INFORMATION

FEDERAL

Toxic Substances Control Act (TSCA)

Section 4 - Test Rule

This product contains the following chemical substance(s) that is(are) subject to a Section 4 Test Rule:

67-64-1 Acetone

Section 8(b) - Inventory Status

This product is in compliance with the Toxic Substances Control Act's Inventory requirements.

Section 12(b) - Export Notice Requirements

This product contains a chemical substance that is currently on the EPA's Section 12(b) Export List. Within seven days of entering into a contract to export and certainly no later than the day of export, the agent of export must notify the EPA of their intent.

Contact the H.B. Fuller TSCA Compliance Manager at 612/481-4816 for the identity of the Section 12(b) chemical(s).

SARA TITLE III

Section 313: This product contains the following toxic chemical(s) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR part 372:

Chemical Name	CAS Number	Percent
n-Hexane	110-54-3	30-50%
Toluene	108-88-3	5-10%
Methyl ethyl ketone	78-93-3	5-10%

STATE REGULATIONS

California Proposition 65: Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986:

This product contains chemical(s) known to the state of California to cause cancer (c) or reproductive (r) damage.

<0.0011% Benzene (c) 71-43-2
listed February 27, 1987
<0.0016% Carbon tetrachloride (c) 56-23-5
listed October 1, 1987
<0.0043% Formaldehyde (c) 50-00-0
listed January 1, 1988
5-10% Toluene (r) 108-88-3
listed January 1, 1991

WHMIS IDENTIFICATION/OTHER INTERNATIONAL REGULATIONS

B2, D2A, D2B

SECTION 16: ADDITIONAL INFORMATION

Drums of this material should be grounded when pouring.

HMIS RATING

Health-2 Flammability-3 Reactivity-0

See SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for personal protective equipment recommendations.

The information and recommendations set forth herein are believed to be accurate. Because some of the information is derived from information provided to the H.B. Fuller Company from its suppliers, and because the H.B. Fuller Company has no control over the conditions of handling and use, the H.B. Fuller Company makes no warranty, express or implied, regarding the accuracy of the data or the results to be obtained from the use thereof. The information is supplied solely for your information and consideration, and the H.B. Fuller Company assumes no responsibility from use or reliance thereon. It is the responsibility of the user of H.B. Fuller Company products to comply with all applicable federal, state and local laws and regulations.

IS NO: 03067 VARAMIDE A-10

SECTION XII ADDITIONAL INFORMATION (continued)

ASON FOR REVISION:
Change in section IX & XI.

TCO CORPORATION
. Box 646
LIN, OH. 43017
4) 764-6548

HOUR EMERGENCY PHONE: (614) 890-5319

he product information contained herein is believed to be accurate s of the date of the Material Safety Data Sheet, and is provided ithout warranty, expressed or implied, as to the results of use of his information or the product to which it relates. Recipient ssumes all responsibility for the use of this information and the se (alone or in combination with any other product), storage, or isposal of the product, including any resultant personal injury r property damage.

***** E N D O F M S D S *****

SDS NO: 03067 VARAMIDE A-10

SECTION X PERSONAL PROTECTION (continued)

THER PROTECTION:
To prevent repeated or prolonged skin contact, wear impervious clothing and boots.
Provide sufficient ventilation to maintain exposures below the PEL and/or level of overexposure.

SECTION XI STORAGE/HANDLING/TRANSPORTATION

TORAGE:
Keep in closed or covered containers when not in use. Store in cool, dry place with adequate ventilation. Do not store near heat or open flame.

Store in accordance with OSHA regulation 1910.106.

ANDLING:
Exercise caution when handling contents of the container. Wash with soap and water before eating, drinking, smoking, or using toilet facilities. Whenever possible, use mechanical means to move large and/or heavy objects to help prevent back injuries.

RANSPORTATION INFORMATION:

DOT - Combustible Liquid NOS (Contains Methanol); NA 1993, RQ
Not regulated in containers of 550 Lbs. capacity or less.
IMO - Not regulated
ICAO - Not regulated

SECTION XII ADDITIONAL INFORMATION

ARA requires submission of annual reports of release of toxic hemicals that appear in 40 CFR 372. This information must be ncluded in all MSDS's that are copied and distributed for this aterial.

omponents present in this product at a level which could require eporting under the statute are:

COMPONENT	CAS NUMBER	PERCENTAGE
Diethanolamine	111-42-2	15-25
Methanol	67-56-1	< 4

)S NO: 03067 VARAMIDE A-10

SECTION VIII REACTIVITY INFORMATION

:OMPATIBILITIES:
Strong oxidizing agents.

:OMPOSITION:
Not Available

:ARDOUS POLYMERIZATION:
:annot Occur

IBILITY:
Stable

SECTION IX UNINTENTIONAL RELEASE INFORMATION

LL AND LEAK PROCEDURE:
liminate all ignition sources (flares, open flames including pilot ights, sparks, etc.). Persons not wearing protective equipment hould be excluded from area of spill. Stop spill at source and ike area of spill to prevent spreading. Pump liquid to salvage an*. Absorb liquid on absorbent material and shovel into o iners.
his material contains diethanolamine; spills may be subject to eporting requirements under CERCLA.

TE DISPOSAL:
ncineration is the recommended disposal method for all chemical astes, although material may be landfilled in accordance with all pplicable regulations. This product, if disposed of, is not onsidered a hazardous waste under current RCRA regulations.

SECTION X PERSONAL PROTECTION

PIRATORY PROTECTION:
NIOSH/MSHA approved respirator with organic vapor canister self-contained breathing apparatus is recommended if there s insufficient ventilation to maintain exposures below the EL and/or level of overexposure.

(PROTECTION:
ear protective gloves such as: Neoprene or BUNA-N.

PROTECTION:
emical splash goggles in compliance with OSHA regulations e advised.

SDS NO: 03067 VARAMIDE A-10

SECTION VI HEALTH INFORMATION (continued)

score: 72 hour (1986 study)
7% Conc. Unrinsed: Moderately irritating, 8.3 max. score: 24 hr. (1986 study)
7% Conc. Rinsed: Slightly irritating, 2.7 max. score: 1 hour (1986 study)
5% Conc. Unrinsed: Slightly irritating, 2.3 max. score: 24 hour (1971 study)

Diethanolamine, a component of this product, was tested by the National Toxicology Program. Results from repeated exposure tests indicate anemia, kidney and liver effects in testing animals. Exaggerated dosages caused heart and central nervous system effects. Other observed effects were judged secondary due to the poor health of the rats and mice due to the high dosages.

ARCINOGENICITY:
This product (or components, if a mixture) is not listed in IARC Monographs, the NTP Sixth Annual Report or the current ACGIH TLVs as a carcinogen or potential carcinogen. It is not regulated by OSHA as a carcinogen.

SECTION VII FIRST AID PROCEDURES

REATHING:
Move individual to fresh air. If there are any symptoms of overexposure, contact a physician.

KIN CONTACT:
Immediately wash exposed area with soap and water for at least 15 minutes, then flush with water for at least 5 minutes. If reddening persists, or if open sores or blisters develop, see a physician. Remove contaminated clothing and launder before re-use.

YE CONTACT:
Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids occasionally. Call a physician.

WALLOWING:
Immediately drink two large glasses of water. Call a physician.

'S NO: 03067 VARAMIDE A-10

SECTION V PHYSICAL PROPERTIES

'EARANCE:	Liquid @ 77 F (25 C)
'R THRESHOLD (ppm):	Unavailable
'CIFIC GRAVITY(approx):	1.01 @ 77 F
'OR PRESSURE (MM/Hg):	92 @ 68 F
'OR DENSITY (Air=1):	Heavier/Air
'T BOILING PT (mm/Hg):	148 F @ 760
'PORATION RATE:	>1
thyl Ether = 1)	
'UBILITY IN WATER:	Dispersable
'K DENSITY (approx):	Not Applic.
'ATILE %	1-5
	9-12
METHOD:	10% in IPA/H20

SECTION VI HEALTH INFORMATION

N:
an cause severe irritation, even burns on prolonged contact. Skin
)sorption can contribute to overall methanol exposure.

3:
ap-r especially when heated can cause irritation, redness, tearing,
l. ed vision; liquid can cause severe or permanent eye damage.

LOWING:
esults in severe damage to mucous membranes. Methanol, when
)gested in excessive amounts, can cause blindness and death.

'THING:
)ncentrations>200ppm of methanol vapor can cause headache,
izziness nausea, etc. Prolonged or repeated exposure or exposure
) extremely high concentrations may result in blindness and death.
xcessive exposure may cause liver and kidney damage.

'CITY DATA:

'al Toxicity (Rats): Practically non-toxic; LD50: >7.5 & <10 gm/Kg

'in Irritation (Rabbits): Undiluted: Corrosive (1971 study);
Undiluted: Severely irritating, 6.7 (1986 study)
7% Conc.: Slightly irritating, 0.2 use concentration (1986 study)

'e Irritation (Rabbits): Undiluted: Moderately irritating, 11.3 max. score: 24 hour (1971 study)
Severely irritating, 64.7 max

SDS NO: 03067 VARAMIDE A-10

SECTION III INGREDIENTS (continued)

escription	Percent	CAS No.	Agency	Exposure Limit
iethanolamine	15-25	111-42-2	OSHA	3 PPM - TWA
			ACGIH	3 PPM - TWA
ethanol	< 4	67-56-1	OSHA	200 PPM - TWA
				250 PPM - STEL
			ACGIH	200 PPM - TWA
				250 PPM - STEL
			NIOSH	200 PPM - TWA
				800 PPM - CEIL
lycerine	1-10	56-81-5	OSHA	10 MG/M3 - TWA
			ACGIH	10 MG/M3 - TWA

SECTION IV FIRE AND EXPLOSION DATA

LASH POINT: 178 F FLASH METHOD: PMCC

XTINGUISHING MEDIA:
Dry Chemical, Water Fog, Regular Foam

PECIAL PROCEDURES:
Wear full protective clothing and self-contained breathing apparatus with full faceshield. Combustion/decomposition products may include amines and other nitrogen compounds, as well as carbon monoxide and carbon dioxide. Water or foam may cause frothing which can be violent, especially if sprayed into containers of hot, burning liquid.

XPLOSION HAZARDS:
Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electric motors or other ignition sources at locations distant from material handling point. Never use cutting or welding torch on or near drum (even empty); product (or even residue) can ignite explosively. All five gallon pails and larger metal containers should be grounded.

PPER EXPLOSION LIMIT: 36.5%
OWER EXPLOSION LIMIT: 1%
UTO IGNITION TEMP: Unavailable

WITCO CORPORATION NINOL 1281 R-CH-043
MATERIAL SAFETY DATA SHEET

OS : 03067

EPARATION DATE: 11/11/1996

#120

SECTION I PRODUCT IDENTIFICATION

ODUCT NAME: VARAMIDE A-10

NONYM: Coco-N,N-bis(Hydroxyethyl) Amide
Amides, C8-18 and C18-unsat'd., bis(Hydroxyethyl) and
Fatty Acids, C8-18 and C18-unsat'd.

ZARD RATINGS:

HEALTH:	3	0 - LEAST
FIRE:	2	1 - SLIGHT
REACTIVITY:	0	2 - MODERATE
OTHER:	-	3 - HIGH
		4 - EXTREME

ZARD RATING METHOD: HMIS

SECTION II PRECAUTIONARY STATEMENT

NGER! Corrosive. Causes skin and eye burns. Vapors, especially upon heating, can cause severe irritation. Avoid contact with skin, eyes and clothing. Avoid inhalation of vapors. Wear protective goggles, gloves and impervious clothing when handling this product. Wash thoroughly after handling.
Combustible. Keep away from heat, sparks and open flames.

SECTION III INGREDIENTS

cription	Percent	CAS No.	Agency	Exposure Limit
des, C8-18 and C18-unsat'd. (Hydroxyethyl)	50-60	68155-07-7		Not Established
ty Acids, C8-18 and C18 aturated	15-25	67701-05-7		Not Established

F-JS-010/071/072 PINE TYPE CLEANER

110010

#33

MATERIAL SAFETY DATA SHEET
PINE TYPE CLEANER

MSDS NO.: CH-0002 PAGE 1 OF 6

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION.

CORNHUSKER STATE INDUSTRIES
P.O. BOX 94661
801 WEST VAN DORN - BLDG.#1
LINCOLN, NEBRASKA 68509-4661
Formula #36-2
Caustic Disinfectant Cleaner

Information Telephone: 800-348-7537
Emergency Telephone : 800-955-9119
Hours of Operation : 8:00am-5:00pm
Fax : 402-479-5627

SECTION 2: COMPOSITION AND INFORMATION ON INGREDIENTS.

COMPOSITION:
Caustic Aqueous Alcohol Antimicrobial Disinfectant

HAZARDOUS INGREDIENTS:

Hazardous Ingredients Greater Than 1%:	CAS%
Terpene Alcohol (Pine Oil)	8002-09-3
Isopropyl Alcohol	67-63-0
Oleic Acid	112-80-1
Sodium o-phenylphenate tetrahydrate	6152-33-6
Sodium Hydroxide	1310-73-2

SECTION 3: HAZARDS IDENTIFICATION.

EMERGENCY OVERVIEW:
Caustic aqueous alcohol solution with pale yellow color.
Slight turpentine odor. Vapor may be combustible.
Corrosive. Can cause severe irritation to eyes and skin.
Inhalation of vapor or mist can cause irritation of upper respiratory tract.
Do not get in eyes, on skin or on clothing.
Avoid breathing vapor.
Possible Cancer Hazard.

POTENTIAL HEALTH HAZARDS.

EYE:
Can cause severe irritation with possible permanent injury.

SKIN:
Skin contact can cause severe irritation and possible burns

SECTION 3: HAZARDS IDENTIFICATION (cont).

INGESTION:
Ingestion can cause burns of the mouth and throat.

INHALATION:
Excessive or prolonged exposure can cause severe irritation to respiratory tract.

SECTION 4: FIRST AID MEASURES.

EYE:
Flush eyes with copious amount of water immediately for at least 15 minutes, occasionally lifting the lids, until no evidence of the chemical remains. Get medical attention immediately.

SKIN:
Remove contaminated clothing and shoes. Wash skin with soap and water. Get medical attention if irritation or any other symptoms develop.

INGESTION:
Treat symptomatically and supportively. Do not induce vomiting. Get medical attention immediately.

INHALATION:
If irritation develops remove to fresh air. If breathing has stopped, administer artifical respiration. Keep at rest. Seek medical attention.

SECTION 5: FIRE FIGHTING MEASURES.

FLAMMABLE PROPERTIES:
Combustible.
FLASH POINT: >100 deg F LIMITS OF FLAMMABILITY:
LEL: 2.0% UEL: 12.0%
For Isopropyl Alcohol

EXTINGUISHING MEDIA:
This material may support combustion. If involved in a fire, use extinguishing media appropriate for the surrounding fire.

FIRE AND EXPLOSION HAZARDS:
Caustic solutions can react with metals and release flammable hydrogen gas.

HAZARDOUS DECOMPOSITION PRODUCTS:
Caustic solution may react with reducing sugars (ie. food soils) to form carbon monoxide.

PINE TYPE CLEANER

SECTION 5: FIRE FIGHTING MEASURES (cont).

FIRE FIGHTING EQUIPMENT:
Wear NIOSH approved equipment including a positive pressure self contained breathing apparatus in any closed space.

SECTION 6: ACCIDENTAL RELEASE MEASURES.

If material is spilled or released, stop discharge and dam up to limit spreading. Flush area with water and neutralize with sodium bicarbonate or dilute acetic acid. Mop up or absorb on inert material and place in suitable container for further handling and disposal. Run-off of large quantities to waterways may create environmental hazards. Notify pollution and health control authorities.

SECTION 7: HANDLING AND STORAGE.

HANDLING:
FOR INDUSTRIAL USE ONLY
Follow good Industrial Hygiene procedures.
Avoid contact.
Do not get into eyes.
Do not breath vapors or mist.
Do not get on skin.
Wash thoroughly after handling.

STORAGE:
Avoid freezing.
Store in a cool, dry, well ventilated area.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION.

RESPIRATORY PROTECTION:
Use in well ventilated areas.
Atmospheric levels should be maintained below the exposure guidelines for the formulation components. If exposure levels exceed the limits for any component a NIOSH approved respirator is required. Guidelines for choice of appropriate respirator and procedures for use are contained in 29 CFR 1910.134 OSHA Respirator Standard.

SKIN PROTECTION:
Solvent and caustic impervious apron and gloves in addition to long sleeved protective clothing are recommended. Apron and gloves should be neoprene, PVC or NBR (nitrile-butadiene rubber) for routine use.

EYE PROTECTION:
Use chemical splash goggles as a minimun or goggles plus a full face shield if unusual splash potential exists.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (cont).

EXPOSURE GUIDELINES:

Sodium Hydroxide: ACGIH TLV and OSHA PEL 2 mg/m3 (ceiling)
o-Phenylphenol Sodium Salt: Dow Chemical Guide 5 mg/m3
Isopropyl Alcohol: ACGIH TLV and OSHA PEL 400 ppm

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES.

APPEARANCE:	Pale Yellow Solution
ODOR:	Turpentine
VAPOR PRESSURE:	< water
SOLUBILITY:	Water Soluble
pH:	Caustic
BOILING POINT:	< water
SPECIFIC GRAVITY:	< 1
VISCOSITY @ 25 deg C:	Same as water
SOLIDS CONTENT:	0
FREEZING POINT:	< 0 deg C
VAPOR DENSITY (air=1):	1
EVAPORATION RATE (butyl acetate):	< 1

SECTION 10: STABILITY AND REACTIVITY.

STABILITY:

Stable.

INCOMPATIBILITY:

This formulation can react violently with strong acids and oxidizing agents. Oleic acid is incompatible with ammonium nitrate, nitrogen oxides and iodine. Contact with metals other than stainless steel will result in discoloration and corrosion of metal. Do not use copper, copper alloy or carbon steel fittings. Do not use with aluminium equipment above 120 deg F.

HAZARDOUS DECOMPOSITON PRODUCTS:

Hydrogen evolution can occur from reaction with metals. Caustic soda can react with sugars (ie. in food residues) to form carbon monoxide.

HAZARDOUS POLYMERIZATION:

The oleic acid component may polymerize at concentrated levels. In this formulation the oleic acid is not expected to present a polymerization hazard due to it's low concentration.

PINE TYPE CLEANER

SECTION 11: TOXICOLOGICAL INFORMATION.

ACUTE:

The sodium hydroxide and o-phenylphenol component of this formulation can be corrosive to skin, eyes and mucous membranes of ingestion and respiratory tracts. o-Phenylphenol has been reported to cause skin depigmentation when given orally, but not by skin contact, when given to experimental animals. The single oral dose toxicity for o-phenylphenol in male rats is 924 mg/kg and for female rats is 731 mg/kg. Terpene alcohol is reported to be a weak skin allergen.

CHRONIC:

o-Phenylphenol is listed as a potential carcinogen by IARC. It has been shown to cause bladder tumors when fed to rats at exaggerated doses, however, cancer risk from typical environmental exposures are considered negligible. Results of in-vitro and animal mutagenicity tests have been negative for o-phenylphenol.

TARGET ORGANS:

Eyes, Skin, Mucous Membranes, Bladder

SECTION 12: ECOLOGICAL INFORMATION.

This formulation has not been tested for environmental effects.
Caustic materials are hazardous to ecological systems.
Direct entry of this formulation into waterways should be avoided.

SECTION 13: DISPOSAL CONSIDERATIONS.

Dispose in accordance with Federal, State and Local regulations. If not diluted and neutralized this formulation may be a D001 and D002 RCRA Hazardous Waste (Combustible and Corrosive).

CONTAINER DISPOSAL:
Residual product may be present in empty containers. Do not reuse containers for food, clothing or products for human or animal consumption.

SECTION 14: TRANSPORTATION INFORMATION.

DOT SHIPPING NAME:..... Caustic Alkali Liquid n.o.s.
HAZARD CLASSIFICATION:..... Corrosive
UN/NA#:..... 1719

PINE TYPE CLEANER

SECTION 15: REGULATORY INFORMATION.

CERCLA SUPERFUND, 40 CFR 117,302:
Under the COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT, a release in excess of 100 lbs could require reporting to the National Response Center.

SARA HAZARD CATEGORY:
Fire Hazard:..... No
Sudden Release of Pressure:... No
Reactivity Hazard:..... No
Acute Health Hazard:..... Yes
Chronic Health Hazard:..... Yes

SARA 313 INFORMATION:
SUPERFUND AMMENDMENTS AND REAUTHORIZATION ACT of 1986 (SARA) Title III requires reporting of release of toxic chemicals that appear in 40 CFR 372. This information must be included in all MSDSs that are copied and distributed for this product. Components present in this product which could require reporting under the statute are:
None.

TOXIC SUBSTANCES CONTROL ACT (TSCA):
All components in this formulation are on the TSCA Inventory.

SECTION 16: OTHER INFORMATION.

Hazard Ratings (HMIS & NFPA):

	HMIS	NFPA		
				0: minimal
Health:	3	3		1: slight
Fire:	1	1	where	2: moderate
Reactivity:	0	0		3: serious
				4: severe

This Material Safety Data Sheet complies with and is supplied pursuant to 29 CFR 1910.1200 OSHA Hazard Communication Standard and is to be used solely for the purposes specified therein.

Molecular weight R-CH-037 TWA

Material safety data

McKesson Chemical Company
P.O. Box 7341
Omaha, NE 68107

R-CH-037

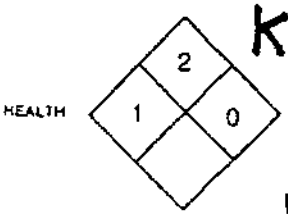
NFPA Designation 704

FIRE R-CH-037

KP-140

KP-140®
Tri-butoxyethyl phosphate

HAZARD RATING:
4 = EXTREME
3 = HIGH
2 = MODERATE
1 = SLIGHT
0 = INSIGNIFICANT



#116

Emergency telephone **(304) 755-3351**

Product Information

Synonyms	Tributoxyethyl phosphate	
Shipping name	DOT Tri-butoxyethyl phosphate, plasticizer	
	IATA Tri-butoxyethyl phosphate, plasticizer	
	IMCO	
Formula	$(C_4H_9OC_2H_4O)_3$ PO	Chemical Family Phosphate ester

Ingredients

Material or component	%	CAS #	Hazard Class
Tri-butoxyethyl phosphate	100	78-51-3	None

Physical data

Melting point	NA	Specific Gravity (H_2O = 1)	1.020
Boiling point @ 4 mm Hg	432° F (222.2° C)	Solubility in H_2O, % by WT	@ 25° C 0.11%
Vapor pressure @ 392° F	1.6 mm Hg	% Volatiles by Volume	No data
Vapor Density (Air - 1)	13.8	Evaporation rate (butyl acetate = 1)	<1
Room temperature: appearance & state	White to straw colored liquid	pH (as is)	NA
Odor	Butyl odor	pH (1% solution)	NA

Fire, explosion and reactivity data

Flash point OC 435° F (224° C)		Flammable Limits (air)	Upper No data
Autoignition temp. 500° F (260° C)			Lower No data

Extinguishing media: ☒ Water ☒ Water Fog ☒ CO_2 ☒ Dry Chemical ☒ Other Foam

Special fire fighting procedures: NIOSH approved self-contained breathing apparatus and full protective clothing.

Degree of fire and explosion hazard: Slight fire hazard: toxic fumes may be liberated

☒ Stable ☐ Unstable | Hazardous Polymerization ☐ May Occur ☒ Will Not Occur

Conditions to Avoid: Extreme heat or cold.

Major contaminates that may contribute to instability: None known

Incompatibility: None known

Hazardous decomposition products: Highly toxic fumes of phosphorus oxides.

*NA—Not Applicable

Health hazard information

Routes of exposure	Route	Hazard classification NIOSH 1974 Pb-246698	Source	Date
	Inhalation	Probability of exposure low due to low volatility Low to moderate hazard LC_{50} = 30 mg/liter (rats) No TLV published	FMC	
	Skin contact	No significant hazard (rabbit)	FMC	
	Skin absorption	No significant hazard (rabbit)	FMC	
	Eye contact	Moderately hazardous (rabbit)	FMC	
	Ingestion	No significant hazard (rat)	FMC	

Effects of Overexposure	
	Acute exposure May be skin and eye irritant. Ingestion may cause illness.
	Chronic exposure See notes to physician below. Negative mutagenicity by Assay of Ames.

Emergency and first aid procedures	
	Eyes Wash with large amounts of water for 15 minutes while holding the eyelids apart. See an ophthalmologist.
	Skin Wash with soap and water.
	Inhalation Remove to fresh air, administer oxygen and/or artificial respiration if needed.
	Ingestion Induce vomiting, call physician.
	Decontamination procedures Wash with soap and water.
	Notes to physician May be irritating to skin, mucous membranes and eyes. Contaminated area should be flooded with water, and any eye contact cases should receive ophthalmologic evaluation. Human systemic toxicity information is unavailable, but is expected to be low or nonexistent. Importantly, structure-activity relationships suggest the absence of appreciable anticholinesterase activity such as possessed by structurally dissimilar organophosphates. Treatment of any toxicity should be symptomatic and supportive after terminating exposure through above means or, in case of ingestion, gastric evacuation via emesis induction or gastric lavage.

Special protection information

Ventilation requirements Use in ventilated areas.

Recommended personal protective equipment:

Respiratory (Specify conditions) In high temperature application or exposure to misting, use a NIOSH certified self-contained breathing apparatus.

Eyes Safety goggles or face shield in case of splashing.

Gloves Rubber or plastic liquid proof gloves.

Special clothing and equipment Full protective clothing.

Precautionary statement

Caution—May cause skin irritation.
Do not take internally.
Wear protective clothing when handling.

Storage and handling

Protect from physical damage.
Use in good industrial hygiene.
Store in a cool ventilated location.
Keep away from food products and food handling areas.
Recommend gasket materials be made of Teflon or compressed asbestos.

Disposal, spill or leak procedures

Aquatic toxicity classification **Source** **Date**
NIOSH RTECS No. 79-100 No data

Procedure for release or spill

Build dike to contain flow. Keep material out of streams and sewers. Soak up spill with an equal mixture of sand and crushed limestone or commercial oil absorbent.

Waste disposal method

Place absorbed material with sand and crushed limestone into a paper carton. Burn in furnace with an after burner and alkaline scrubber. Discard in approved chemical waste management facility. Dispose in accordance with local environmental regulations. Do not open burn.

Neutralizing chemicals Crushed limestone

FMC

Transporation data	
	Chemtrec Emergency Telephone: (800) 424-9300
	Proper shipping name Tri-butoxyethyl Phosphate
	DOT classification Plasticizer
	DOT labels None
	DOT marking None
	DOT placard None
	UN number None
	Hazardous substance/RQ None
	49 STCC number None
	Emergency accident precautions and procedures Observe precautions as for any high boiling organic liquid.
	Precautions to be taken in transportation Same as above
	CMA chemcard number None
	Type packages Tank cars, tank trucks, drums

Additional regulatory concerns	
	Material is reported in EPA TSCA inventory list ☒ Yes ☐ No

FMC Corporation Industrial Chemical Group 2000 Market Street Philadelphia, Pennsylvania 19103

(215) 299-6000

Date of issue	Supersedes
11-15-81	

001310-73-2

CAUSTIC SODA FLAK

MAR 9 199

HARCROS CHEMICALS INC
KANSAS CITY, KANSAS

100

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA FLAKE LG 100# DATE: 05/05/93 PAGE 01
PRODUCT CODE: 16-08012-03

CAS # 001310-73-2

FORMULA: NaOH

CHEMICAL FAMILY: Alkali

CHEMICAL NAME AND SYNONYMS: Sodium Hydroxide, Grades - Semiconductor Reagent, ACS; USP; Technical, Anhydrous, Beads, Flake, Sodium Hydroxide Pellets, Soda Lye, Pusher(R), DB Compounder

SUPPLIERS NAME: Harcros Chemicals Inc
5200 Speaker Rd
Kansas City Ks 66106
SUPPLIERS PHONE NUMBER: 913-321-3131
TRANSPROTATION EMERGENCY PHONE NUMBER: 1-800-424-9300

S.A.R.A. INFORMATION

HAZARDS: Fire:No Pressure:No Reactivity:Yes Acute: Yes Chronic:Yes
PHYSICAL DATA: Mixture:No Pure:Yes Solid:Yes Liquid:No Gas:No

SECTION I Hazardous Ingredients

Ingredient	Percent	TLV
Sodium Hydroxide (CAS # 1310-73-2)	approx. 100%	TWA/TLV 2 mg/m3 Ceiling OSHA/ACGIH 2 mg/m3 15 min Ceiling NIOSH

SECTION II Health Hazards

Threshold Limit Value: See Section I

Potential Effects of Exposure:

Eyes:
Caustic soda is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness. Mist or dust can cause irritation with high concentrations causing burns.

Skin:
Major potential hazard - solid or liquid contact with skin can cause severe burns deep ulcerations. Contact with dust or mist can cause multiple burns with temporary loss of hair at burn site. Solutions of up to 4% in water may not cause irritation and burning for several hours, while 25 to 50% solutions can cause these effects in less than 3 minutes.

Inhalation:
Airborne concentrations of dust, mist, or spray of caustic soda may cause mild irritation at 2mg/m(3), and, at higher concentrations, damage to the upper respiratory tract and even to the lung tissue proper which could produce chemical pneumonia, depending upon severity of exposure. Chronic overexposure to spray or mist may result in irritation or tissue damage and an increased susceptibility to respiratory illness, and permanent lung damage.

Ingestion:
Caustic soda can cause severe burns and complete tissue

083

CONTINUED ON PAGE 02

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA FLAKE LG 100# DATE: 05/05/93 PAGE 02
PRODUCT CODE: 16-08012-03

SECTION II Health Hazards CONTINUED

perforation of mucous membranes of the mouth, throat, esophagus, and stomach if swallowed. Severe scarring of the throat can occur after swallowing. Death can result from ingestion.

First aid:

Eyes:
Immediately flush eyes with large quantities of water, for at least a 15 minute period, periodically lifting upper and lower lids to ensure washing of entire surface. Washing eyes within one minute is essential to achieve maximum effectiveness. Seek medical attention immediately. Contact lenses should not be worn when working with this chemical.

Skin:
Immediately wash contaminated skin with plenty of water. If wearing goggles flush head and face thoroughly before removing goggles. Remove contaminated clothing under the shower. This washing may be followed with a rinse with vinegar or dilute acetic acid (3% solution) if available. If skin feels slippery, caustic may be present in sufficient quantities to cause rash or burn, continue washing until slippery, feeling is gone. Remove contaminated clothing and footwear and wash clothing before re-use. Discard footwear which cannot be decontaminated. Seek medical attention immediately.

Inhalation:
Get person out of contaminated area to fresh air. If breathing has stopped, artificial respiration should be started. Oxygen may be administered, if readily availble. Seek medical attention immediately.

Ingestion:
If swallowed, DO NOT induce vomiting. Give large quantities of water. If available, give several glasses of milk or acidic beverages (tomato or orange juice, carbonated soft drinks). Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Seek medical attention immediately.

Other Information:

HEALTH HAZARD DATA:

Acute LC(50)	>40 mg/m(3)/1 Hr.
Oral Acute LD(50) (rat):	140 - 340 mg/kg
Dermal Acute LD(50) (Rabbit):	> 2 g/kg.

Sodium Hydroxide is not listed on the IARC, NTP, OSHA or EPA carcinogen lists.

Medical Conditions aggravated by Exposure:
May aggravate existing skin and/or eye conditions on contact, also asthma, respiratory and cardiovascular disease.

Reproductive Toxicity:
No studies are identified relative to sodium hydroxide and reproductive toxicity.

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: The IDLH level for sodium hydroxide is 200 mg/cubic-meter.

PRIMARY ROUTES OF EXPOSURE: Inhalation and skin.

NOTES TO PHYSICIAN:

CONTINUED ON PAGE 03

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA FLAKE LG 100#
PRODUCT CODE: 16-08012-03 DATE: 05/05/93 PAGE 03

SECTION II Health Hazards

CONTINUED

CORROSIVE! May cause stricture. If lavage is performed, suggest endotracheal and/or esophagoscopic control.

SECTION III Special Protection Information

Respiratory Protection:
For exposures above PEL/TLV and up to 50 mg/m(3) use any powered air-purifying respirator with a dust and mist filter or supplied-air respirator operating in a continuous flow mode. In each case full eye protection essential. For this recommendation and advice on higher concentrations see Ref.(1) Section IX.

Ventilation Required:
Provide ventilation adequate to maintain airborne concentrations below OSHA limits of 2 mg/m(3). Local exhaust ventilation preferred where dilutions or reactions cause misting, or solid caustic soda ground up and dust generated. Air concentration of carbon monoxide formed by reaction of caustic soda and reducing sugars should not exceed 50 ppm for an 8 hr TWA. Ventilation equipment should be corrosion-resistant, and, if hydrogen may be generated, explosion-proof.

Protective Clothing:

Eyes:
Wear chemical splash goggles and face shield whenever exposure possible.
Have eye baths immediately available where eye contact can occur.

Skin:
Gloves coated with rubber, PVC, or other plastic required, also hard hats, safety shoes, and rubber boots, along with rubber apron when handling caustic soda. Provide a safety shower at any location where skin contact can occur. Sleeves should be worn over gloves and pants over rubber boots to avoid skin contact. Caustic soda attacks wool.

Additional Protective Measures:
Neutralization supplies, (3% acetic acid preferably) and abundant running water should be close at hand in working and storage areas.

SECTION IV Fire & Explosion Hazard Data

Flash Point (Method): None

Flammable Limits (% Volume in Air):

Upper: Non-Flammable

Lower: Non-Flammable

Extinguishing Media:
Dry chemicals or "alcohol" foam for adjacent fire. Avoid use of carbon dioxide if possible as it reacts exothermically with

CONTINUED ON PAGE 04

MATERIAL SAFETY DATA SHEET

SECTION IV Fire & Explosion Hazard Data CONTINUED

caustic soda.

Special Fire Fighting Procedures:
Pressure-demand self-contained respiratory protection and protective clothing should be worn by firefighters. Thoroughly decontaminate equipment after use. Flood with water to cool containers, using care not to splatter or splash the material.

Unusual Fire and Explosion Hazards:
Highly flammable hydrogen is formed by reaction of concentrated caustic soda with aluminum, tin, zinc, and alloys which contain these metals. See Section IX in regard to violent reaction when water added to concentrated caustic soda. Contact with water or moisture may generate enough heat to ignite combustible materials.

SECTION V Physical Data

Boiling Point: 2530 deg. F

Specific Gravity (H(2)O=1): 2.13 @ 68 deg. F

Vapor Pressure (MM HG.): Negligible

Vapor Density (AIR=1): N/A

Evaporation Rate (Butyl Acetate=1): N/A

Solubility in Water: Complete

Percent Volatile by Volume: Not volatile

pH: (1% aqueous solution) approx. 13

Appearance and Odor: White solid, beads, pellets, and flakes, no distinct odor.

SECTION VI Reactivity Data

Stability: Stable in normal use, in a sealed container. Is hygroscopic and will pick up moisture on exposure to humid air. Will slowly absorb carbon dioxide from the air to form sodium carbonate.

Incompatibility: With strong acids, without dilution or agitation, will produce a violent or explosive reaction. Will react with leather and wool, also aluminum, zinc, tin, and alloys containing these metals, nitrocarbons and halocarbons (Trichlorethylene will react to form spontaneously flammable dichloroacetylene). Also reacts with acetaldehyde, acrolein, chlorine trifluoride, maleic anhydride, phosphorus, pentoxide, tetrahydrofuran and hydroquinone. Will react with metals to form hydrogen gas only in presence of moisture. Protect against contact with moisture. At elevated temperatures may cause caustic embrittlement of steel.

Hazardous Decomposition Products: Caustic soda reacts with reducing sugars (e.g. in food soils when used in cleaning

CONTINUED ON PAGE 05

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA FLAKE LG 100#
PRODUCT CODE: 16-08012-03
DATE: 05/05/93 PAGE 05

SECTION VI Reactivity Data

compounds) to form hazardous carbon monoxide. CONTINUED
closed or semi-closed areas, after cleaning, test and monitor Before entering
space for carbon monoxide.

Hazardous Polymerization: Will not occur.

SECTION VII Spill and Leak Procedures

Steps to be taken if material is released or spilled:

Clean-up workers must use protective clothing and equipment to prevent body contact. Running water should be available for emergency use.

Liquid Product: Preferred clean-up procedure dam up spill, cover with sand or inert porous material, transfer into caustic-resistant containers (labelled "Corrosive"). Solid Product: When solid sodium hydroxide is spilled in a dry condition, it can be promptly shoveled up for recovery or disposal. (CAUTION! Avoid Dusting, Avoid Contact with skin or eyes). Control the disposal of the waste solid. (Delay in clean-up may allow absorption of moisture from the atmosphere and may increase the difficulties of clean-up). Avoid flushing chemical into public sewer or water systems. Flush clean-up area with water. Dilute acid, preferably acetic acid may be used to neutralize final traces of caustic (observe appropriate safety precautions for handling acid solutions). Small spills may be neutralized with dilute acidic solution (dilute-acetic or 6 molar hydrochloric acid) before flushing away. For large spills pick up spill with vacuum equipment (alkali resistant) for disposal, or flush to holding area with water, prior to neutralization. Notify local health and pollution control officials if flushed spillage unavoidably enters public sewers orother water systems. If spill occurs into navigable water, notify U.S. Coast Guard. Caution! Spill area will be slippery. Spills of 1000 lbs or more must be reported to the National Response Center - Phone: (800) 424-8802.

Waste Disposal Method:

If not diluted and neutralized, this product, as a liquid, can become a hazardous waste as designated by the Environmental Protection Agency under authority of the Resource Conservation and Recovery Act (RCRA). The waste would have RCRA Hazardous Waste number D002 (Corrosive) as designated in 40 CFR 261.22. Federal, state and local regulations should be followed in disposing of this substance; also empty containers and materials used in cleaning up spills or leaks.

If solid product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous solid waste it should be disposed of in accordance with local, state, and federal regulations by treatment in a wastewater treatment system.

AQUATIC TOXICITY:
Aquatic Toxicity Rating 2 (TLM96:100-10 ppm)

CONTINUED ON PAGE 06

MATERIAL SAFETY DATA SHEET

SECTION VII Spill and Leak Procedures CONTINUED

TLM96 - Gambusia Affinis (Mosquito-Fish) 125 ppm)
TLM48 - Brown Shrimp 33-100 ppm, Cockle 330-1000 ppm, armed bulhead.
33-100 ppm, unspecified platfish 33-100 ppm
TLM24 - Small Bass 31.7 ppm, Bluegill 76.6 ppm

SECTION VIII D.O.T. Shipping Information

Proper Shipping Name:	SODIUM HYDROXIDE DRY, SOLID, FLAKE, BEAD OR GRANULAR
Hazard Class:	CORROSIVE MATERIAL
ID Number:	UN1823
Label Requirements:	CORROSIVE
Reportable Quantity:	NONE
Other Information:	

SECTION IX Additional Information

This information may be of importance to you:

FURTHER PRECAUTIONARY MEASURES:
Keep container closed. Avoid contact with strong acids to prevent violent or explosive reactions. Do not allow water to get into container because of violent reaction with concentrated caustic soda.

When diluting, add Caustic Soda slowly with agitation to surface of solution to avoid violent splattering, boiling and eruption. Water should always be lukewarm (80-100 deg. F), never start with hot or cold water.

Product can react EXPLOSIVELY with acids, aldehydes, and many organic chemicals - when mixing product with solutions containing such chemicals, follow all of above mixing instructions, and add product very gradually, while stirring constantly.

Emptied container retains vapor and product residue. Observe labeled safeguards until container is cleaned, reconditioned or destroyed.

Minimize skin contact. Wash with soap and water before eating, drinking, smoking or using toilet facilities. Wash thoroughly after handling or contact. Exposure can cause burns which are not immediately painful or visible. (Never touch eyes or face with hands or gloves that by be contaminated with custic soda).

REFERENCES

(1) Patty's Industrial Hygiene and Toxicology, 3rd Edition, p. 3062.

(2) NIOSH/OSHA Pocket Guide to Chemical Hazards DHHS (NIOSH) Publication No. 85-114

CONTINUED ON PAGE 07

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA FLAKE LG 100# DATE: 05/05/93 PAGE 07
PRODUCT CODE: 16-08012-03

SECTION IX Additional Information CONTINUED

(3) Fire Protection Guide on Hazardous Materials, Eighth Edition - NFPA.

HAZARD RATING	NPCA/HMIS	NFPA
Health	3	3
Flammability	0	0
Reactivity	1	1
Special Protection	X	

********* E N D O F R E P O R T *********

NAME: GENE TURNER

DATE ISSUED: 11/04/1985
DATE REVISED: 09/26/1989

< = LESS THAN
> = MORE THAN

N/A = NOT APPLICABLE
N/D = NOT DETERMINED
N/E = NOT ESTABLISHED

UNK = UNKNOWN

The information provided in this Material Safety Data Sheet has been obtained from sources believed to be reliable. Harcros Chemicals Inc provides no warranties, either expressed or implied and assumes no responsibility for the accuracy or completeness of the data contained herein. This information is offered for your information, consideration and investigation. You should satisfy yourself that you have all current data relevant to your particular use. Harcros Chemicals Inc knows of no medical condition, other than those noted on this material safety data sheet, which aregenerally recognized as being aggravated by exposure to this product.

R-CH-[illegible] CAUSTIC POTASH

REPORT NUMBER: 700 VAN WATERS & ROGERS INC. PAGE: 001
MSDS NO: 0C31867 MATERIAL SAFETY DATA SHEET
EFFECTIVE DATE: 04/06/94 VERSION: 002

99

PRODUCT: CAUSTIC POTASH-ANHYDROUS (ALL GRADES)

ORDER NO: 185995
PROD NO : 500916

CORNHUSKER STATE INDSTR
PURCHASING DIVISION
14TH & PIONEER BLVD

LINCOLN ,NE 68502

VAN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR (206)287-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

---------- EMERGENCY ASSISTANCE ----------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

PRODUCT NAME:
CAUSTIC POTASH-ANHYDROUS (ALL GRADES)

MSDS #: 0C31867

1. PRODUCT IDENTIFICATION

HMIS HAZARD RATINGS

HEALTH HAZARD 3 FIRE HAZARD 0 REACTIVITY 2
Based on the National Paint & Coatings Association HMIS rating system.

SARA/TITLE III HAZARD CATEGORIES (See Section X)

Immediate (ACUTE) Health YES Reactive Hazard YES
Delayed (Chronic) Health NO Sudden Release of Pressure NO
Fire Hazard NO

MANUFACTURER'S NAME AND ADDRESS: Occidental Chemical Corporation, Customer Service, Occidental Tower, P O Box 809050, Dallas, Texas 75380 Telephone (1-800-752-5151)

CHEMICAL NAME Potassium Hydroxide CAS NUMBER 1310-58-3

SYNONYMS/COMMON NAMES Caustic Potash

PRODUCT: CAUSTIC POTASH-ANHYDROUS (ALL GRADES)

ORDER NO: 165995
PROD NO : 500916

CHEMICAL FORMULA KOH

PRODUCT USE Glass Manufacture, Industrial Cleaners, Chemical processes, Petroleum Industry

DOT PROPER SHIPPING NAME Potassium Hydroxide, Solid

DOT HAZARD CLASS 8

DOT I.D. NUMBER UN1813

DOT PACKING GROUP II

DOT HAZARDOUS SUBSTANCE RQ 1000 lbs. (Potassium Hydroxide)

DOT MARINE POLLUTANT NA

ADDITIONAL DESCRIPTION REQUIREMENT NA

TDG SHIPPING NAME Potassium Hydroxide, Solid

TDG PRIMARY CLASS 8

TDG SECONDARY CLASS(ES) (9.2)

TDG PRODUCT I.D. NUMBER UN1813

TDG PACKING GROUP II

[illegible]

3. HEALTH HAZARD INFORMATION

EMERGENCY AND FIRST AID PROCEDURES

EYES
OBJECT IS TO FLUSH MATERIAL OUT IMMEDIATELY THEN SEEK MEDICAL ATTENTION. IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN
IMMEDIATELY wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear and wash clothing before reuse. Discard footwear which cannot be